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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,716	04/05/2004	Isidoro Natalio Markus		1177
7590	02/22/2005		EXAMINER	
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		ART UNIT	PAPER NUMBER	3636

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



In re application of Isidoro N. Markus

April 26, 2005

For: "Reclinable Chair Mechanism"

Serial No 10/816,716

Filed : June 28, 2004

Art unit : 3636

Examiner: Rodney B. White

SIR:

The Office Action of February 22, 2005, has been carefully considered.

Claims 1 through 8 inclusive, originally submitted in the present application, have been canceled. Claims 9 through 14 inclusive have been substituted in their stead.

The present claims now attempt to define the structure of the chair and its relation to the reclining mechanism. It is intended that the structure form a part of the combination of the present inventive disclosure.

It is believed that the claims now remaining in the application adequately distinguish over any know art including those cited by the Patent Examiner.

- REMARKS -

The present invention pertains specifically to four legged reclinable chairs, a piece of furniture, where the seat can be rocked in a back and forth manner, solely by the force exerted by the seat occupant feet against the floor.

Also, most of the universe of existent chairs are armless chairs, meaning that they don't have a structure above the seat level to support the occupant arms. Since one of the features of the present application is that the reclining mechanism is housed in an ubiquitous horizontal bar that the chair's industry always built below the seat level, this invention is perfectly applicable to armless chairs.

The Applicant's statement of reasons for allowance are: the amended claims are allowable over the prior art of record because the prior art fails to show or suggest, either single or in combination thereof, of a generic four legged chair having a seat which is mounted between two side frames spaced apart by cross rails, each side frame having a horizontal member and vertical leg members, wherein means attached to the seat sliding over a circular segment or slots, housed inside said horizontal members, creating a virtual transverse axis of pivoting for the seat.

In the present reclinable chair all the pivoting motions of the seat are achieved solely by the action of the seat occupant feet against the floor. In order to recline the seat, the occupant pushes the seat backwards, hence lifting the center of gravity of the entirety seat-occupant mass. The seat will remain in the reclined position by a combination of: friction within the runners and the slots, and by the small force permanently applied by the occupant feet against the floor.

If the occupant wants to recline forward, he just released some of the force applied by his legs, and the weight of the entire seat-occupant would force down the potential height of the center of gravity, hence, pivoting the seat forward. The potential height of the center of gravity is lowest at the seat most forward, or upright, position.

In this invention, the side members are metal bars -or wooden planks- of about one by three inches rectangular cross sections. A very common dimension in the furniture industry.

Moreover, another feature of the invented reclinable chair, is that the mechanism is hidden inside the horizontal side members, and since having horizontal side members are a very common way of designing and manufacturing four legged chairs, the reclinable capability of the seating is completely disguised. A major styling achievement.

But the most important feature of the Applicant's reclinable chair is the placement of plastic shoes or runners having a large surface of friction with the slot or circular segments.

The friction of the runners over the lower paths of the slot, plus the correct placement of the virtual center of rotation, creates a degree of engagement that 'retains' the occupied seat in any position of its rotation range.

- ANALYSIS OF THE PRIOR ART CITED BY THE PATENT EXAMINER -

Patent No 4,842,232 by Pipon refers to a motorized reclinable vehicle seat.

In this application, one of the ball bearing curved slide members of the invention is attached to the seat, while the corresponding section of the other slide member is secured to the vehicle floor. Here, a motorized rack and pinion mechanism provides the relative motions between the seat and the vehicle floor.

Nothing in Pipon disclosure could anticipate the operation and purpose of the Applicant four legged reclinable chair invention.

Patent No 4,861,106 by Sondergelt relates to a seat assembly for an office chair or the like, having a seat and back (numerals 6 and 7) "hinged together at their adjoining ends by a floating articulation and at points distanced from the articulation 8, bearing elements 13 and 14, which are guided by slots mounted on a central cradle".

The differences with the Applicant patent are obvious: Sondergelt's is an office chair having a vertical post 3 and a spider base 1. The bearing elements are wheels, that are disposed on the seat and on the back, And finally, the cradle 5 that houses the slots and the linkages 10 and 11 are placed well above the seat level, making this invention inapplicable to an armless reclinable chair.

This invention didn't anticipate the reclinable four legged chair of the Applicant.

Patent # 4,957,302 by Maxwell relates to a support apparatus for an occupant assuming a plurality of unnatural positions, close to the ground, while at work..

In this seating device, a plurality of circular shaped flanges 82 and 84, located at the bottom of the seat 12, encapsulating a plurality of plastic runners 58 and 60, that are attached to an horizontal plate 14, mounted over casters 32. The mechanism is visible, and present numerous pinch points that would make it unacceptable as a piece of furniture.

It was never intended to be a reclinable chair to begin with, hence no vertical legs, circular segments or slots are needed. Moreover, the apparatus occupant could not pivot the seat by solely using his feet.

Definitively: Maxwell patent did not anticipate the Applicant invention.

Patent # 5,244,252 A by Serber refers to a safety seat for a vehicle that, under special circumstances (like heavy braking or collision), forces of inertia will push it (the seat) forward horizontally, before pivoting upwardly in order to keep the occupant, seated.

Here, wheels running in concave arcuate slots having a plurality of different diameters, determine the instant center of rotation of the seat, since there isn't a fixed center of rotation . The center of rotation of the seat is given -at any time- by the position of the wheels in the arcuate slots. The slots, some of them so large (the diameters) that they become almost straight lengths, are needed to let the seat gain forward momentum.

With the seat in the normal position, that is, before a rapid deceleration, and the wheels resting on the 'straight lengths' of the slot, there is nothing that the occupant could do solely with his feet to pivot the seat for-and-back .

Besides, any safely rotation of the seat is only acquired by a concave arcuate slot. while in the Applicants disclosure the slots could be concave or convex. Moreover, the framework of my reclinable chair is completely absent.

It would be impossible for one skilled in the art of building furniture, to recognize Serber patent as anticipating the Applicant invention of a reclinable chair as a piece of furniture.

Patent # 5,522,182 A by Rogers refers to a stadium multiple seating, whereby a pair of side supports, each having an arcuate channel, engages an unitary seat component having corresponding arcuate flanges. No cross rails to keep the sides rigidly in place are claimed.

The novelty of this stadium chairs is to enable the front edge 26 of a seat to swing away from the back portion 22 of a similar seat on front of it, creating in fact a wider walking passageway .

In observing Fig.1 and Fig. 7B of the drawings, it becomes obvious that -occupied or empty- the seat will always remain in an 'upright' position, with the front ends of the flanges 28 resting against the front ends of the channels 52.

Obviously, the seat could not be reclined for comfort, this means rotated counter-clockwise, because the only possible rotation would be clock-wise.

By rotating clockwise, the top edge of the back portion 22 advances to the front of the seat while lowering and moving back the front edge 26, in fact 'tobogganing' the occupant out of the seat, toward the floor. Under normal seating conditions it will be very difficult for the occupant to rotate the seat clockwise, since in this invention the seat was specifically designed to be rotated only when empty (unloaded).

Plus, in this patent, the side frames are higher than the seat level, making it unacceptable for an armless chair.

Definitively, Serber patent did not disclose the Applicant invention.

Patent No 5,558,399 A by Serber relates to a vehicle safety chair composed of a seat, a back support, and a lumbar support which will move in proportional relationship to each other.

In usage, any chair motion is initiated during a deceleration of the vehicle by the linear momentum of the person's buttocks and lower body mass along a concave arcuate path that will rise substantially the front edge of the seat.

The lumbar support is pivotally and axially coupled to the back, and pivotally connected to the rear of the seat. Any forward motions of the seat brings forward the lower edge of the lumbar support, thereby the buttocks and lumbar region of a user seated in said chair assembly will remain supported in substantial contact with both said seat and said lumbar support during rapid fore and aft motion of said seat.

However, even extreme tilting angles of the seat horizontal board 22 would not affect the seat vertical board 23 that is adjustably coupled at 28 to a rigid mounting bracket 29 secured to mounting means 25 of the chair, that in turn are mounted to the vehicle floor 31. The angle of seat back 23 is adjustable by lever 32 in a conventional manner, but the seat back 23 remains fixed under all usable conditions.

This invention didn't anticipate the reclinable four legged chair of the Applicant, that doesn't have a lumbar support, and were the back and seat boards rotate together.

Patent No 5,735,574 by Serber is a continuation of U.S. patent application Ser. No. 08/305,026, entitled SEAT AND LUMBAR MOTION CHAIR, ASSEMBLY AND METHOD, filed Sep. 13, 1994, now issued U.S. Pat. No. 5,558,399 A.

This patent refers to a vehicle safety chair composed of a seat, a back support, and a lumbar support which will move in proportional relationship to each other.

In usage, any chair motion is initiated during a deceleration of the vehicle by the linear momentum of the person's buttocks and lower body mass along a concave arcuate path that will rise substantially the front edge of the seat.

The lumbar support is pivotally and axially coupled to the back, and pivotally connected to the rear of the seat. Any forward motions of the seat brings forward the lower edge of the lumbar support, thereby the buttocks and lumbar region of a user seated in said chair assembly will remain supported in substantial contact with both said seat and said lumbar

support during rapid fore and aft motion of said seat. However, even extreme tilting angles of the seat would not affect the seat back 23 that is adjustably coupled at 28 to a rigid mounting bracket 29 secured to mounting means 25 of the chair, that in turn are mounted to the vehicle floor 31. The angle of seat back 23 is adjustable by lever 32 in a conventional manner, but the seat back 23 remains fixed under all usable conditions.

This patent shares the same drawings, the abstract and even claim 1 of Serber Patent No 3,338,399 A. The rest of the patent claims define more sharply the different components of the seat and their relationship therewith, but doesn't introduce new inventions.

Nothing on the disclosure of the Serber Patent would anticipate the Applicant reclinable four legged chair.

Patent No 6,056,363 A by Maddox refers to a computer chair apparatus for use with a monitor and keyboard, having a flat platform and a carriage 28 on top of it. The carriage is slideable mounted on a corresponding tubular arcuate base 26. No cross rails are needed, since the platform keeps the two side frames forcible in place.

This being a motorized reclinable chair, all the seat positions are acquired by a motor 43 driving a threaded screw 44.

Nothing on the disclosure of the Maddox patent would anticipate the Applicant reclinable four legged chair, where all the seat position are acquired solely by the action of the occupant feet against the floor.

Patent No 6,106,065 A by Carroll, relates to a motorized lift and tilt examination chair. Slot 54 in side rail 50, houses rollers 48a and 48b, attached to the seat. Here, the rollers are not attached directly to the seat, but to a structure 46, that in term is mounted on a lifting cylinder 42. All the seat motions are electrically motorized.

Moreover, Carroll invention would not anticipate an armless reclinable chair since the rails 50 and 52 have to extend almost to the occupant shoulders height, well above the seat level.

Patent No 6,641,214 B2 by Verneruso relates to an aircraft chair whereby the rear seat portion is articulated connected to the lower back portion. The back motions are guided by the two strait slots 5 and 6, while the seat motions are guided by an elongated arcuate slot 7. The forward sliding of the seat 3 drag along the lower bottom of the back 2. Since there isn't a common axis of rotation, seat and back don't realize the same angle of pivoting.

Moreover, the lateral structure 4 having the straight slots 5 and 6 for the back 2, are well above the top surface of the seat 3, making this invention unsuitable for armless reclinable chairs.

Definitively, the Applicant invention was not suggested or implied by the art disclosed by the Verneruso invention.

Document No 2003/0011227 A1 by Markus must refer to a patent application for a reclinable chair –now abandoned- that I filed in 2003. Thought the reclining chair comprised two supportive side frames having horizontal and vertical members, spaced apart by cross rails, the seat disposed between said side frames pivoted over a transverse solid torsion shaft.

The shaft was anchored at its ends to the horizontal members, while the seat was anchored to the middle of the shaft. Only the continuous pushing back on the seat by the occupant, would keep (the seat), in any chosen position. The main drawback of the torsion shaft was the inability to distinguish the weight of the chair occupant. A small child or a heavy set adult had to exert the same effort to tilt the seat, while in the present application the friction of the runners on the slot is proportional to the chair occupant weight.

No slots or wheels were disclosed, and my invention then, didn't anticipate the present invention were the seat pivot around a virtual transverse axis.

Accordingly, even though the prior art cited by the Patent Examiner may have some resemblance in structural appearance, the purpose and function of the reference disclosures are completely non-analogous to the present furniture invention, thereby rendering the same as non-anticipating disclosures.

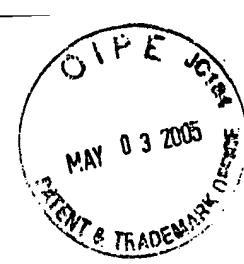
None of the chairs in those disclosures are - nor claimed to be - reclinable chairs solely activated by the occupant feet.

Accordingly, it is submitted that the claims now remaining in the application avoid all of the objections raised by the Examiner. It is further submitted that the claims patentably distinguish over the art of record. As a consequence, it is requested that the claims now remaining in the application be noticed for allowance to a new address, but please, not before July 2005. Due to personal hardships I may not be available before then. Thanks.

Respectfully submitted,



Isidoro N. Markus



9- A chair having a reclinable seat comprising in combination two supporting side frames, each having at least one substantially horizontal member and substantially vertical leg members, said frames disposed in a spaced apart relationship by cross-rails, a seat disposed within said frames further having an upholstered bottom board and an upholstered back board connected together, the bottom board having front and rear edges, further comprising:

- means for supporting said seat including (1) a plurality of concentric circular ring sector shaped slots located on said horizontal members, and (2) a plurality of plastic runners attached to said seat bottom board and sliding in said slots; said slots having substantial end surfaces,
- the centers of said circular slots defining a virtual transverse axis of rotation of the seat;
- a lining material covering the lower paths of the slots; the slot paths having detent means to moveable engage with corresponding detent means located on the runners;
- a plurality of runners moveably engaged into said slots and attached onto brackets that are securely connected to the bottom board, the runners having matching curvatures with the lower paths of the slots, the runners having substantial end surfaces to engage said ends of the slots;
- springs attached at one end to the horizontal members and at the other end to the bottom board to force the runners against one of the slots ends, and
- cover plates fastened to the horizontal members having circular ring sector shaped slots concentric with the axis of rotation of the seat, the runners moveably engaged with respect to the cover plates slots, the ends of the slots having substantial surfaces to stop the rotation of the runners.

10- A chair having a reclinable seat comprising in combination two supporting side frames, each having at least one substantially horizontal member and substantially vertical leg members, said frames disposed in a spaced apart relationship by cross-rails, a seat disposed within said frames further having an upholstered bottom board and an upholstered back board connected together, the bottom board having front and rear edges, further comprising:

- means for supporting said seat including (1) a plurality of concentric circular ring sector shaped slots located on said bottom board; and (2) a plurality of plastic runners attached to said horizontal members sliding in said slots, said slots having substantial end surfaces,
- the centers of said circular slots defining a virtual transverse axis of rotation of the seat;
- a lining material covering the lower paths of the slots; the slot paths having detent means to moveable engage with corresponding detent means located on the runners;
- a plurality of runners moveably engaged into said slots and attached onto brackets that are securely connected to the bottom board, the runners having matching curvatures with the lower paths of the slots, the runners having substantial end surfaces to engage said ends of the slots;
- springs attached at one end to the horizontal members and at the other end to the bottom board to force the runners against one of the slots ends, and
- cover plates fastened to the horizontal members having circular ring sector shaped slots concentric with the axis of rotation of the seat, the runners moveably engaged with respect to the cover plates slots, the ends of the slots having substantial surfaces to stop the rotation of the runners.

- 11-** A chair as described in claims **1** and **2** whereby the circular ring sector slots are placed into inserts.
- 12-** A chair as described in claims **1** and **2** whereby the runners are wheels.
- 13-** A chair as described in claims **1** and **2** whereby the horizontal members have a channel shaped cross-section.
- 14-** A chair as on claim **1** and **2** whereby the virtual transverse axis of rotation is horizontally located four to eight inches forward of the rear edge of said seat bottom board.